

Listing of Claims

1. (Currently Amended) ~~A method of supplying a plasma torch with a gas, mixed gas or gas mixture, in which the volume flow of the gas, mixed gas or gas mixture is controlled,~~

~~characterised~~

~~in that the volume flow control is effected in combination with a pressure control of the gas, mixed gas or gas mixture in such a way that the pressure control is used to adjust the level of the total volume flow through the nozzle of the plasma torch, and the volume flow control is used to adjust the volume flow portions producing the total volume flow, taking the desired gas composition into account. A method of supplying a plasma torch with at least one gas in which the volume flow of the at least one gas is controlled, the method comprising:~~

~~determining a desired composition of the at least one gas to be supplied to a plasma torch;~~

~~providing, from at least one gas source, a volume of the desired composition of the at least one gas to the plasma torch; and~~

~~effecting volume flow control of the at least one gas to the plasma torch by using pressure control to adjust the level of the total volume of the at least one gas flowing through the plasma torch and using volume flow control to adjust volume flow portions producing the total volume flow of the at least one gas flowing through the plasma torch, thereby producing the desired composition of the at least one gas.~~

2. (Currently Amended) ~~The method as claimed in claim 1, characterised in that the pressure in the interior of the plasma torch between the electrode and the nozzle of the plasma torch is measured directly or indirectly. The method of claim 1 further comprising supplying the at least one gas as a mixed gas to the plasma torch.~~

3. (Currently Amended) ~~The method as claimed in claim 2, characterised in that the pressure in the gas delivery means is measured upstream of the plasma torch. The method of claim 1 further comprising supplying the at least one gas as a gas mixture to the plasma torch.~~

4. (Currently Amended) ~~The method as claimed in claim 2, characterised in that the volume flow control is effected by means of one or more volume flow control means, and the pressure is measured between the one or more volume flow control means and the plasma torch. The method of claim 1 further comprising measuring the pressure of the at least one gas upstream of the plasma torch.~~

5. (Currently Amended) ~~The method as claimed in claim 4, characterised in that the pressures of the individual gases or individual mixed gases are measured and a mean pressure is formed from the pressures measured. The method of claim 1 further comprising directly measuring the pressure of the at least one gas between an electrode and a nozzle in the interior of the plasma torch.~~

6. (Currently Amended) ~~The method as claimed in claim 4, characterised in that the individual gases or individual mixed gases are combined and the resulting pressure is measured. The method of claim 1 further comprising using at least one volume flow controller to effect volume flow control of the at least one gas, and measuring pressure of the at least one gas between the at least one volume flow controller and the plasma torch.~~

7. (Currently Amended) ~~The method as claimed in claim 4, characterised in that at least two individual gases or mixed gases are combined and the resulting pressure is measured. The method of claim 1 further comprising, using at least one volume flow controller to effect volume flow control of the at least one gas, and measuring pressures of individual gases of the at~~

least one gas between the at least one volume flow controller and the plasma torch and forming a mean pressure from measured pressures of individual gases.

8. (Currently Amended) ~~The method as claimed in claim 1, characterised in that the volume flow of a gas mixture is controlled by controlling the volume flows of the individual gases or individual mixed gases of the gas mixture.~~ The method of claim 1 further comprising combining individual gases of the at least one gas and measuring a resulting pressure.

9. (Currently Amended) ~~The method as claimed in claim 1, characterised in that at least one volume flow is controlled on the basis of the calorimetric measurement of the volume flow, on the basis of the measurement of the volume flow from the differential pressure or on the basis of a pulse measurement.~~ The method of claim 1 further comprising combining at least two individual gases of the at least one gas and measuring a resulting pressure.

10. (Currently Amended) ~~The method as claimed in claim 1, characterised in that the plasma torch is additionally supplied with secondary gas or secondary mixed gas or a secondary gas mixture and the volume flow of the secondary gas or secondary mixed gas or secondary gas mixture is controlled.~~ The method of claim 1 further comprising controlling the volume flow of a gas mixture of the at least one gas by controlling the volume flows of individual gases of the at least one gas.

11. (Currently Amended) ~~The method as claimed in claim 10, characterised in that the volume flow control of the secondary gas, secondary mixed gas or secondary gas mixture is effected in combination with a pressure control of the secondary gas, secondary mixed gas or secondary gas mixture in such a way that the pressure control is used to adjust the level of the~~

~~total volume flow of the secondary gas, secondary mixed gas or secondary gas mixture through the secondary gas nozzle of the plasma torch, and the volume flow control is used to adjust the volume flow portions producing the total volume flow, taking the desired secondary gas composition into account. The method of claim 1 further comprising controlling at least one volume flow of the at least one gas on the basis of calorimetric measurement of the volume flow.~~

12. (Currently Amended) ~~The method as claimed in claim 1, characterised in that the plasma torch, before being supplied with the gas, mixed gas or gas mixture, is supplied separately with a pre-flow gas at a controlled pressure, and/or after being supplied with the gas, mixed gas or gas mixture, it is supplied separately with a post-flow gas at a controlled pressure post-flow gas. The method of claim 1 further comprising controlling at least one volume flow of the at least one gas on the on the basis of the measurement of the volume flow from differential pressure.~~

13. (Currently Amended) ~~The method as claimed in claim 1, characterised in that the gas, mixed gas or gas mixture is a plasma gas, plasma mixed gas or plasma gas mixture. The method of claim 1 further comprising controlling at least one volume flow of the at least one gas on the on the basis of a pulse movement.~~

14. (Currently Amended) ~~An arrangement (10) for supplying a plasma torch with a gas or mixed gas or gas mixture with a means (18) for delivering the gas or mixed gas or gas mixture to the plasma torch and a volume flow control means for controlling the volume flow of the gas or mixed gas or gas mixture,~~

characterised

~~in that the volume flow control means is combined with a pressure control means to control the pressure of the gas, mixed gas or gas mixture in such a way that the pressure control means is used to adjust the level of the total volume flow through the nozzle (14) of the plasma torch, and the volume flow control means is used to adjust the volume flow portions producing the total volume flow, taking the desired gas composition into account. The method of claim 1 further comprising supplying the plasma torch with an additional secondary gas that is controlled.~~

15. (Currently Amended) ~~The arrangement (10) as claimed in claim 14, characterised in that a pressure measuring means is provided for directly or indirectly measuring the pressure in the interior of the plasma torch between the electrode (12) and the nozzle (14) of the plasma torch. The method of claim 1 further comprising supplying the plasma torch with an additional secondary mixed gas that is controlled.~~

16. (Currently Amended) ~~The arrangement (10) as claimed in claim 15, characterised in that the pressure measuring means comprises a pressure measuring means (4a, 4b, 4c) for each individual gas or mixed gas. The method of claim 1 further comprising supplying the plasma torch with an additional secondary gas mixture that is controlled.~~

17. (Currently Amended) ~~The arrangement (10) as claimed in claim 15, characterised in that the pressure measuring means comprises a single pressure measuring means (4a) for~~

~~measuring the pressure of the combined individual gases or mixed gases. The method of claim 1~~
~~further comprising supplying the plasma torch with at least one additional secondary gas and~~
~~effecting volume flow control of the at least one additional secondary gas by using pressure~~
~~control to adjust the level of the total volume of the at least one additional secondary gas flowing~~
~~through the plasma torch and using volume flow control to adjust volume flow portions~~
~~producing the total volume flow of the at least one additional secondary gas supplied to the~~
~~plasma torch, thereby producing the desired composition of the at least one additional secondary~~
~~gas.~~

18. (Currently Amended) ~~The arrangement (10) as claimed in claim 15, characterised~~
~~in that the pressure measuring means comprises at least one pressure measuring means (4a) for~~
~~measuring the pressure of at least two combined individual gases or mixed gases. The method of~~
~~claim 1 further comprising separately supplying the plasma torch, with at least one pre-flow gas~~
~~at a controlled pressure before supplying the plasma torch with the at least one gas.~~

19. (Currently Amended) ~~The arrangement (10) as claimed in claim 14, characterised~~
~~in that the volume flow control means for controlling the volume flow of a gas mixture~~
~~comprises a volume flow control means (1a, 1b, 1c) for each individual gas or mixed gas of the~~
~~gas mixture. The method of claim 1 further comprising separately supplying the plasma torch~~
~~with at least one post-flow gas at a controlled pressure after supplying the torch with the at least~~
~~one gas.~~

20. (Currently Amended) ~~The arrangement (10) of claim 14, characterised in that, in addition, a means (20) is provided for delivering a secondary gas, secondary mixed gas or secondary gas mixture to the plasma torch and a secondary gas volume flow control means is provided for controlling the volume flow of the secondary gas or secondary mixed gas or secondary gas mixture. The method of claim 1 further comprising supplying the at least one gas as at least one of plasma gas, plasma mixed gas, and plasma gas mixture.~~

21. (Currently Amended) ~~The arrangement (10) of claim 20, characterised in that the secondary gas volume flow control means is combined with a secondary gas pressure control means for controlling the pressure of the secondary gas, secondary mixed gas or secondary gas mixture in such a way that the pressure control means is used to adjust the level of the total volume flow through the secondary gas nozzle (16) of the plasma torch, and the volume flow control means is used to adjust the volume flow portions producing the total volume flow, taking the desired secondary gas composition into account. An arrangement for supplying a plasma torch with at least one gas in which the volume of the at least one gas is controlled, the arrangement comprising:~~

~~_____ at least one gas source for providing at least one gas to be supplied to the plasma torch;~~

~~_____ at least one volume flow portion to produce a total volume flow of the at least one gas to the plasma torch; and~~

~~_____ an effected volume flow control for controlling volume flow of the at least one gas to the plasma torch, said volume flow control using pressure control to adjust the level of the total volume of the at least one gas flowing through the plasma torch, said volume flow control~~

adjusting the volume flow portions producing the total volume flow of the at least one gas flowing through the plasma torch, thereby producing the desired composition of the at least one gas.

22. (Currently Amended) ~~The arrangement as claimed in claim 14, characterised in that, in addition, pre-flow gas delivery means are provided for separately delivering a pre-flow gas to the plasma torch and a pressure control means (17) is provided for controlling the pressure of the pre-flow gas, and/or a post-flow means is provided for separately delivering a post-flow gas to the plasma torch and a pressure control means (17) is provided for controlling the pressure of the post-flow gas.~~ The arrangement of claim 21, the gas supplied to the plasma torch being a mixed gas.

23. (Currently Amended) ~~The arrangement (10) as claimed in claim 14, characterised in that the gas is a plasma gas, the mixed gas is a plasma mixed gas and the gas mixture is a plasma gas mixture.~~ The arrangement of claim 21, the gas supplied to the plasma torch being a gas mixture.

24. (New) The arrangement of claim 21, the arrangement having a gas mixture delivery apparatus comprising:

at least one pressure measure, said pressure measure being responsive to the pressure of at least one of the volume flow portions;

at least one logic controller, said logic controller being responsive to said at least one pressure measure; and

at least one volume flow controller positioned to control volume flow of at least one of the volume flow portions.

25. (New) The arrangement of claim 21 further comprising at least one pressure measure for directly measuring pressure of the at least one gas between an electrode and a torch nozzle in the interior of the plasma torch.

26. (New) The arrangement of claim 21 further comprising at least one pressure measure for measuring pressure of each of said at least one volume flow portion.

27. (New) The arrangement of claim 21 further comprising a single pressure measure for measuring pressure of all of said at least one volume flow portion.

28. (New) The arrangement of claim 21 further comprising at least one pressure measure for measuring the pressure of each of said at least one gas.

29. (New) The arrangement of claim 21 further comprising a single pressure measure for measuring the pressure of all of said at least one gas.

30. (New) The arrangement of claim 21 further comprising a single pressure measure for measuring the pressure of at least two of said at least one gas that are combined.

31. (New) The arrangement of claim 21 further comprising a separate volume flow controller for controlling the volume flow for each of said at least one gas.

32. (New) The arrangement of claim 21 further comprising a separate volume flow controller for controlling the volume flow of each of said at least one volume flow portion.

33. (New) The arrangement of claim 21 further comprising a secondary gas mixture delivery apparatus for supplying the plasma torch with at least one secondary gas that is controlled.

34. (New) The arrangement of claim 21 further comprising a secondary gas mixture delivery apparatus for supplying the plasma torch with at least one secondary gas, said gas mixture delivery apparatus using an effected secondary volume flow control to control volume flow of the at least one secondary gas to the plasma torch, said secondary volume flow control using pressure control to adjust the level of the total volume of the at least one secondary gas flowing through the plasma torch, said secondary volume flow control adjusting the volume flow portions producing the total volume flow of the at least one secondary gas flowing through the plasma torch, thereby producing the desired composition of the at least one secondary gas.

35. (New) The arrangement of claim 21 further comprising a pre-flow gas delivery apparatus for separately delivering at least one pre-flow gas to the plasma torch, the pressure of the at least one pre-flow gas being controlled.

36. (New) The arrangement of claim 21 further comprising a post-flow gas delivery apparatus for separately delivering at least one post-flow gas to the plasma torch, the pressure of the at least one post-flow gas being controlled.

37. (New) The arrangement of claim 21, the at least one gas being supplied as at least one of plasma gas, plasma mixed gas, and plasma gas mixture.